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**Raul E. Curto\*** ([raul-curto@uiowa.edu](mailto:raul-curto@uiowa.edu)), Department of Mathematics, University of Iowa, Iowa City, IA 52242. *Generating tuples associated with Reinhardt domains in  $\mathbb{C}^n$ .*

In joint work with Sameer Chavan, we consider an abstract framework to study generating  $m$ -tuples, and use it to analyze hypercontractivity and hyperexpansivity in several variables. These two notions encompass hyponormality and subnormality, as well as toral and spherical isometries; for instance, the Drury-Arveson 2-shift is a spherical complete hyperexpansion.

Our framework allows us to look at operator tuples associated with domains in  $\mathbb{C}^n$ . For example, for a 2-tuple  $(T_1, T_2)$  acting on a Hilbert space  $\mathcal{H}$ , and the Reinhardt domain

$$\{(z, w) \in \mathbb{C}^2 : |z|^2 + |w|^4 < 1\},$$

the generating 1-tuple is given by

$$Q(X) := T_1^* X T_1 + T_2^{*2} X T_2^2 \quad (X \in B(\mathcal{H})).$$

We show that every completely hyperexpansive generating tuple can be associated with a canonical 1-variable unilateral weighted shift; in the specific case of the Drury-Arveson 2-shift, this leads to the Dirichlet shift. We obtain a dilation theorem for a subclass of completely hyperexpansive generating tuples which includes, in particular, 2-isometric ones. Our proof is based on Stinespring's dilation theorem and a suitable Lévy-Khinchin representation formula. (Received September 18, 2012)